SANTA CRUZ BIOTECHNOLOGY, INC.

PDK3 (A-4): sc-365378



BACKGROUND

Pyruvate dehydrogenase kinase family members (PDK1, 2, 3, 4) are serine kinases that catalyze phosphorylation of the E1 α subunit of the pyruvate dehydrogenase complex (PDC). PDC activity is controlled through phosphorylation and dephosphorylation of the E1 α subunit, which leads to inactivation and reactivation, respectively. PDK3 binding to a free lipoyl domain (L2) in dihydrolypoyl acetyltransferase (E2), which comprises the core of PDC, leads to a large increase in E1 α phosphorylation. Upregulation of PDK isoenzymes occurs during starvation conditions, where acetyl-CoA is alternatively generated through fatty acid oxidation. PDKs contain five conserved regions and are mechanistically similar to bacterial His-kinases in that both require histidine residues for activity. In mammals, transcripts for PDK3 are most abundant in testis and moderately expressed in heart and skeletal muscle.

REFERENCES

- 1. Gudi, R., et al. 1995. Diversity of the pyruvate dehydrogenase kinase gene family in humans. J. Biol. Chem. 270: 28989-28994.
- Bowker-Kinley, M.M., et al. 1998. Evidence for existence of tissuespecific regulation of the mammalian pyruvate dehydrogenase complex. Biochem. J. 329: 191-196.
- Mooney, B.P., et al. 2000. Histidine modifying agents abolish pyruvate dehydrogenase kinase activity. Biochem. Biophys. Res. Commun. 267: 500-503.
- Baker, J.C., et al. 2000. Marked differences between two isoforms of human pyruvate dehydrogenase kinase. J. Biol. Chem. 275: 15773-15781.

CHROMOSOMAL LOCATION

Genetic locus: PDK3 (human) mapping to Xp22.11; Pdk3 (mouse) mapping to X C3.

SOURCE

PDK3 (A-4) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 7-29 near the N-terminus of PDK3 of human origin.

PRODUCT

Each vial contains 200 μ g IgG_{2a} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

PDK3 (A-4) is available conjugated to agarose (sc-365378 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-365378 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-365378 PE), fluorescein (sc-365378 FITC), Alexa Fluor[®] 488 (sc-365378 AF488), Alexa Fluor[®] 546 (sc-365378 AF546), Alexa Fluor[®] 594 (sc-365378 AF594) or Alexa Fluor[®] 647 (sc-365378 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor[®] 680 (sc-365378 AF680) or Alexa Fluor[®] 790 (sc-365378 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

Blocking peptide available for competition studies, sc-365378 P, (100 μ g peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

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APPLICATIONS

PDK3 (A-4) is recommended for detection of PDK3 of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 μ g per 100-500 μ g of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for PDK3 siRNA (h): sc-39029, PDK3 siRNA (m): sc-152139, PDK3 shRNA Plasmid (h): sc-39029-SH, PDK3 shRNA Plasmid (m): sc-152139-SH, PDK3 shRNA (h) Lentiviral Particles: sc-39029-V and PDK3 shRNA (m) Lentiviral Particles: sc-152139-V.

Molecular Weight of PDK3: 47 kDa.

Positive Controls: MCF7 whole cell lysate: sc-2206 or PDK3 (m): 293T Lysate: sc-122470.

DATA





PDK3 (A-4): sc-365378. Western blot analysis of PDK3 expression in non-transfected: sc-117752 (**A**) and mouse PDK3 transfected: sc-122470 (**B**) 293T whole cell lysates

PDK3 (A-4): sc-365378. Immunoperoxidase staining of formalin fixed, paraffin-embedded human thyroid gland tissue showing cytoplasmic and membrane staining of glandular cells.

SELECT PRODUCT CITATIONS

- Lu, T., et al. 2020. Up-regulation of hypoxia-inducible factor antisense as a novel approach to treat ovarian cancer. Theranostics 10: 6959-6976.
- Kang, H.J., et al. 2021. Pyruvate dehydrogenase kinase 1 and 2 deficiency reduces high-fat diet-induced hypertrophic obesity and inhibits the differentiation of preadipocytes into mature adipocytes. Exp. Mol. Med. 53: 1390-1401.
- Liu, Z., et al. 2023. Iron promotes glycolysis to drive colon tumorigenesis. Biochim. Biophys. Acta Mol. Basis Dis. 1869: 166846.
- Oh, C.J., et al. 2024. Sodium phenylbutyrate attenuates cisplatin-induced acute kidney injury through inhibition of pyruvate dehydrogenase kinase 4. Biomedicines 12: 2815.

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

RESEARCH USE

For research use only, not for use in diagnostic procedures.